FIG.1

TRANSMITTING SIDE

CHANNEL STATE

SUBCARRIER

RECEIVING SIDE

FIG.2

10 MULTICARRIER TRANSMISSION APPARATUS

TRANSMISSION DATA

12 MAPPING SECTION

13 PHASE ROTATION SECTION

14 IQ SEPARATION SECTION

15 16 BUFFER

17 INTERLEAVER

18 COMBINING SECTION

19 S/P SECTION

20 IFFT SECTION

21 RADIO TRANSMISSION SECTION

FIG.3

30 MULTICARRIER RECEPTION APPARATUS

33 RADIO RECEPTION SECTION

34 FFT SECTION

35 PHASE COMPENSATION SECTION

36 IQ SEPARATION SECTION

37 38 BUFFER

39 DEINTERLEAVER

40 COMBINING SECTION

41 PHASE ROTATION SECTION

42 DEMAPPING SECTION

RECEPTION DATA

FIG.5

I COMPONENT

Q COMPONENT

SUBCARRIER

FIG.7

100 MULTICARRIER TRANSMISSION APPARATUS

TRANSMISSION DATA

101 MAPPING SECTION

102 PHASE ROTATION SECTION

103 108 IQ SEPARATION SECTION

104 105 109 110 BUFFER

106 111 INTERLEAVER

107 112 COMBINING SECTION

113 S/P SECTION

114 IFFT SECTION

115 RADIO TRANSMISSION SECTION

FIG.9

I COMPONENT

Q COMPONENT

FIG.11

I COMPONENT

Q COMPONENT

SUBCARRIER

FIG.13

200 MULTICARRIER TRANSMISSION APPARATUS

TRANSMISSION DATA

101 MAPPING SECTION

201 203 PHASE ROTATION SECTION

108 202 IQ SEPARATION SECTION

104 105 109 110 BUFFER

106 111 INTERLEAVER

107 112 COMBINING SECTION

113 S/P SECTION

114 IFFT SECTION

115 RADIO TRANSMISSION SECTION

FIG.14

300 MULTICARRIER RECEPTION APPARATUS

302 RADIO RECEPTION SECTION

303 FFT SECTION

304 PHASE COMPENSATION SECTION

305 IQ SEPARATION SECTION

306 307 313~316 BUFFER

308 317 318 DEINTERLEAVER

309 319 320 COMBINING SECTION

310 PHASE ROTATION SECTION

311 SEPARATION SECTION

312 LLR CALCULATION SECTION

FIRST BIT

SECOND BIT

THIRD BIT

FOURTH BIT

321 DEMAPPING SECTION

RECEPTION DATA

FIG.16

FIRST BIT

SECOND BIT

THIRD BIT

FOURTH BIT

RECEPTION POINT

CANDIDATE POINT FOR "1"

CANDIDATE POINT FOR "0"

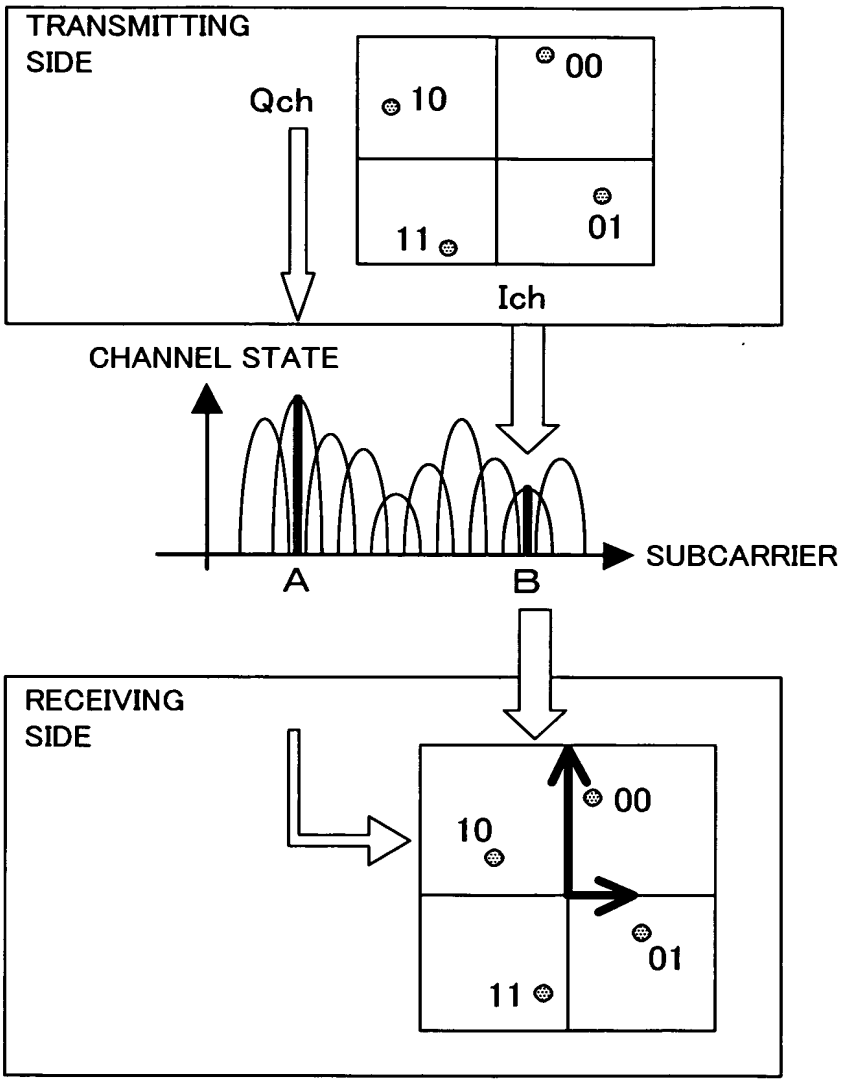
FIG.17

RECEPTION POINT X

CANDIDATE POINT FOR "1"

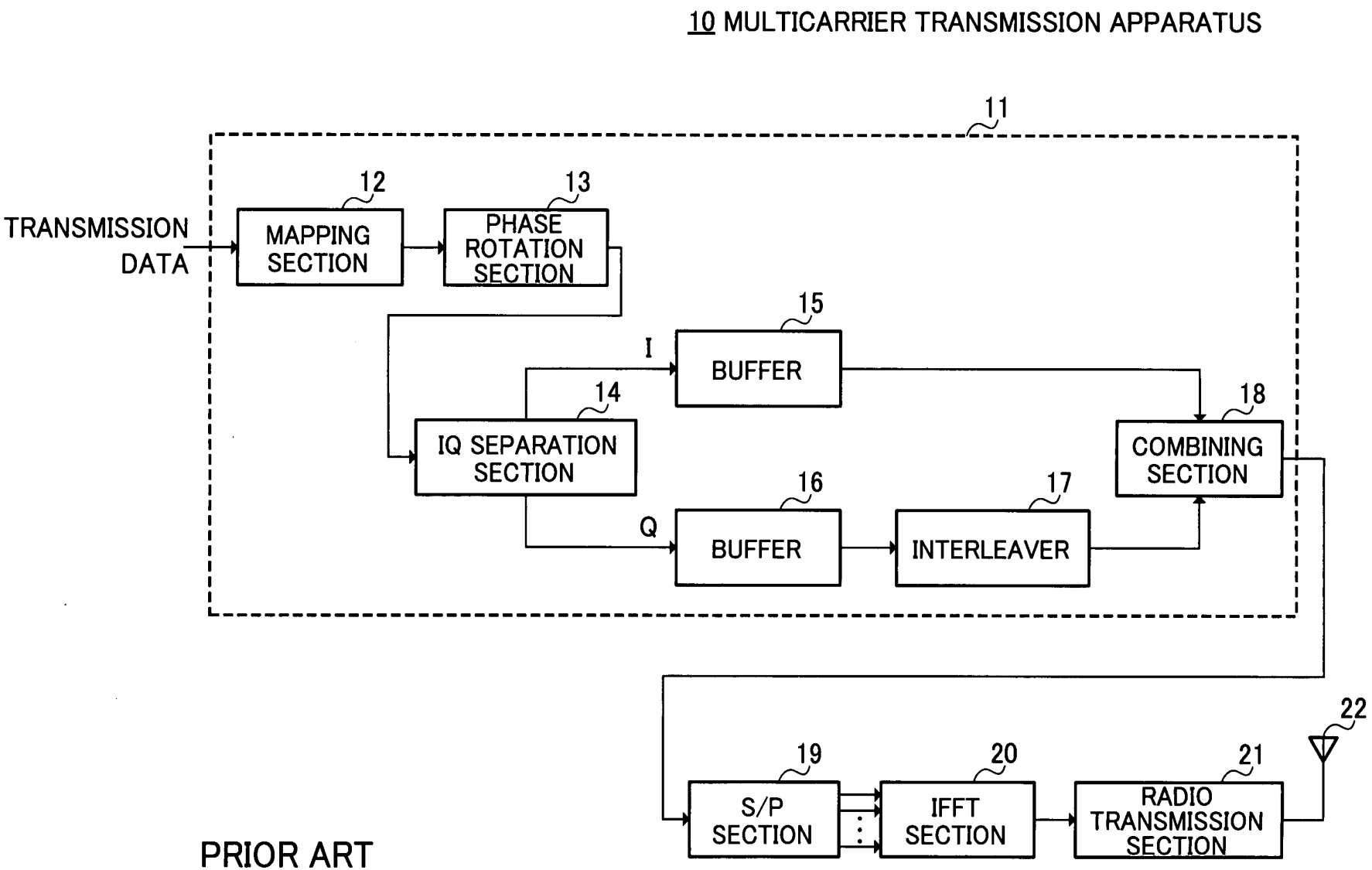
CANDIDATE POINT FOR "0"

POSITION



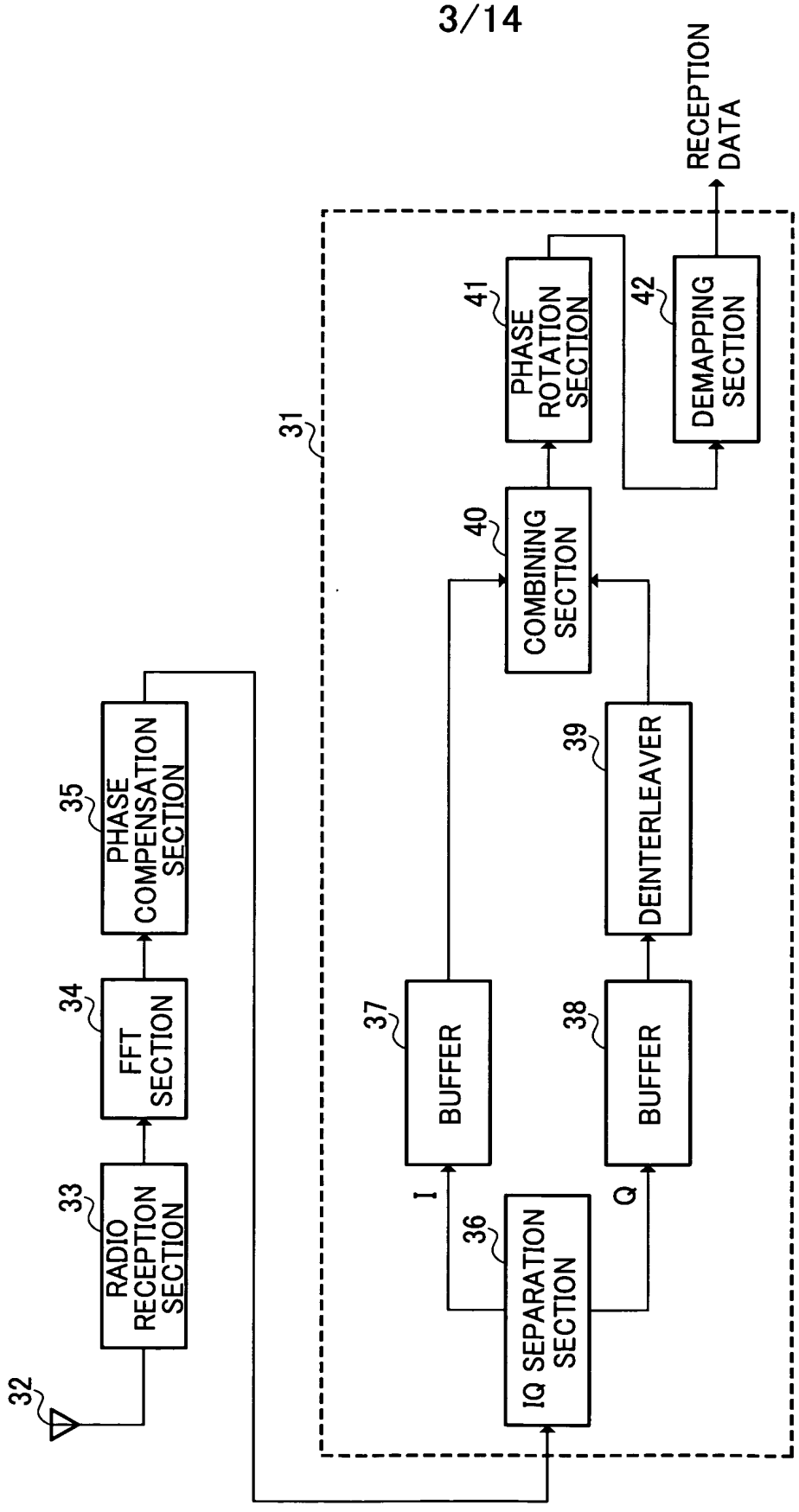
PRIOR ART

FIG.1



PRIOR ART

FIG.2



PRIOR ART

FIG.3

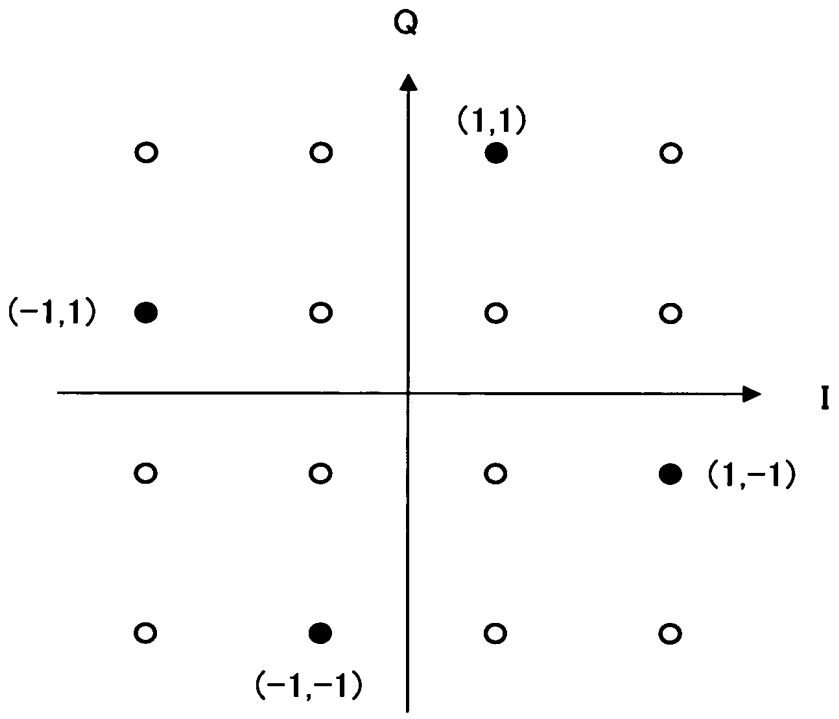

Q
(1,1)
(−1,1)
I
(1,−1)
(−1,−1)

FIG.4

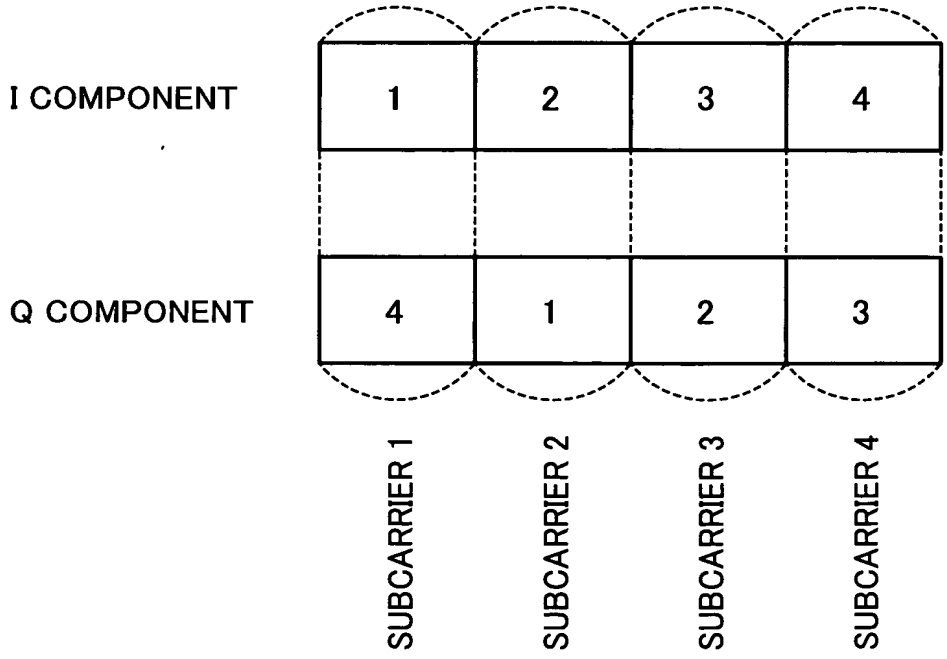

I COMPONENT
1
2
3
4
Q COMPONENT
4
1
2
3
SUBCARRIER 1
SUBCARRIER 2
SUBCARRIER 3
SUBCARRIER 4

FIG.5

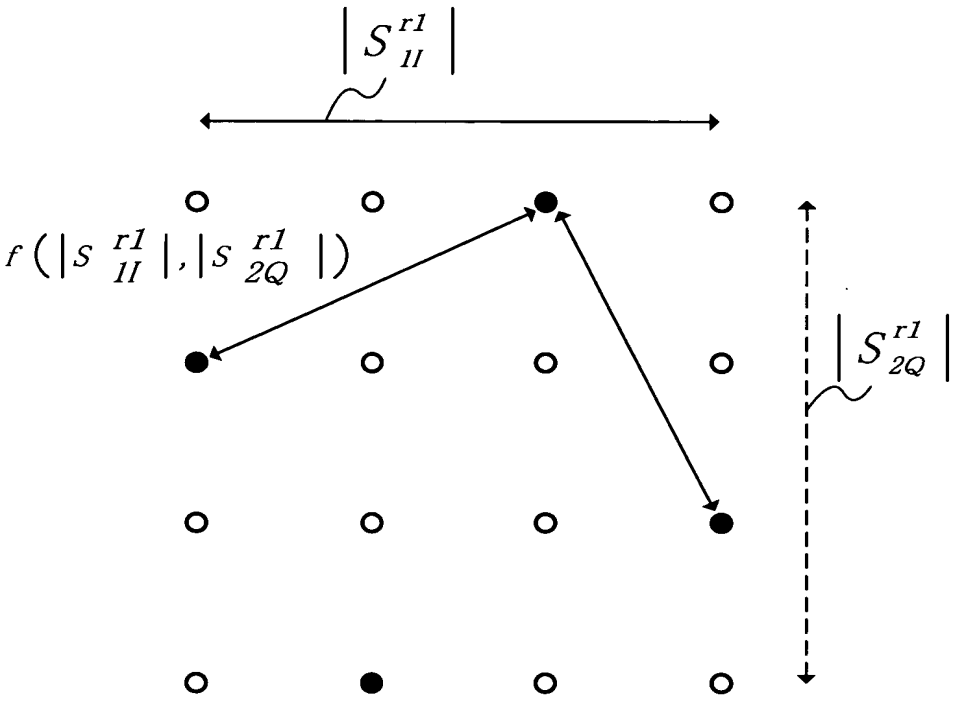


FIG.6

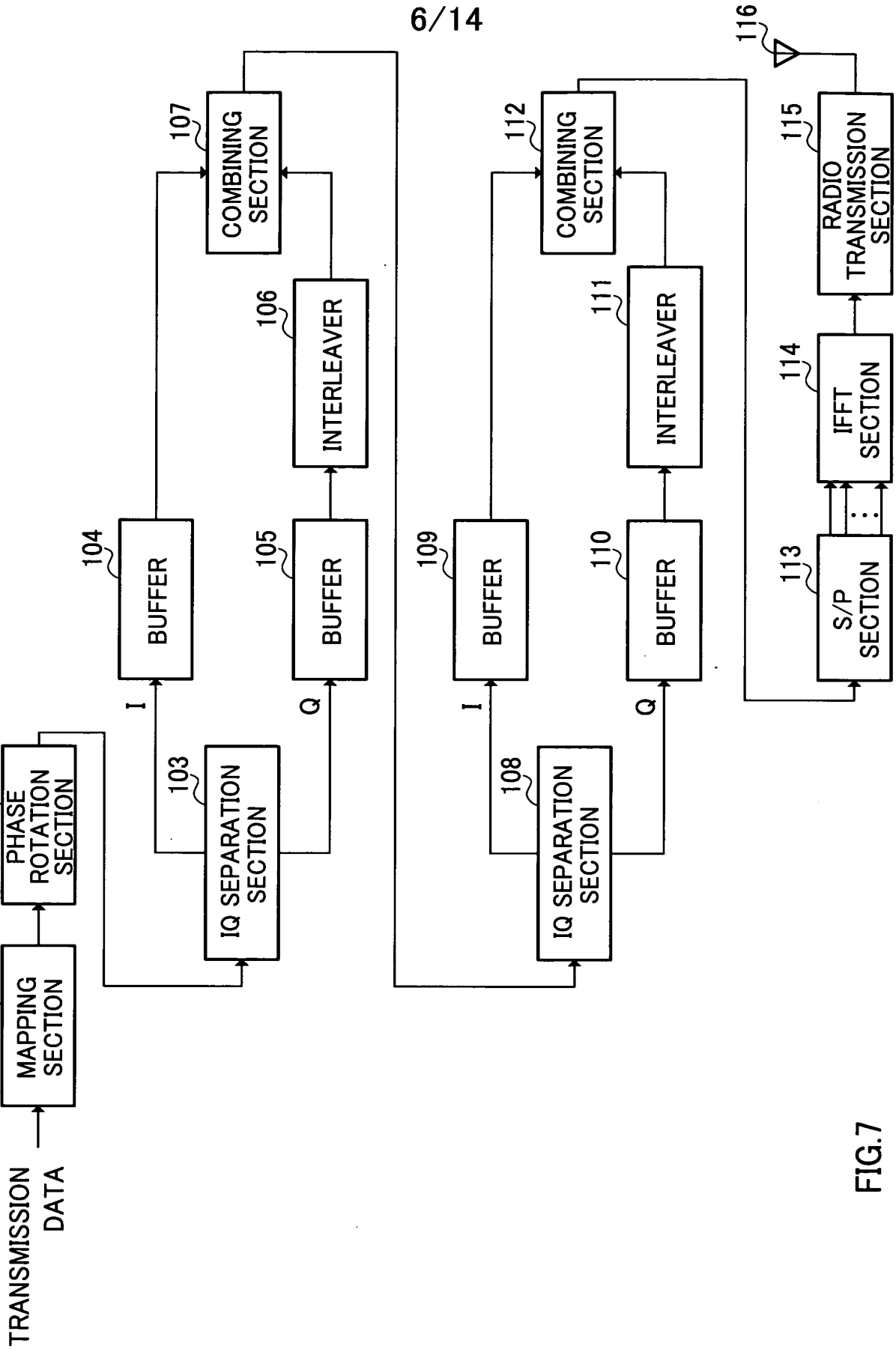

100 MULTICARRIER TRANSMISSION APPARATUS
TRANSMISSION DATA
101
MAPPING SECTION
102
PHASE ROTATION SECTION
103
IQ SEPARATION SECTION
I
Q
104
BUFFER
105
BUFFER
106
INTERLEAVER
107
COMBINING SECTION
108
IQ SEPARATION SECTION
I
Q
109
BUFFER
110
BUFFER
111
INTERLEAVER
112
COMBINING SECTION
113
S/P SECTION
114
IFFT SECTION
115
RADIO TRANSMISSION SECTION
116

FIG.7

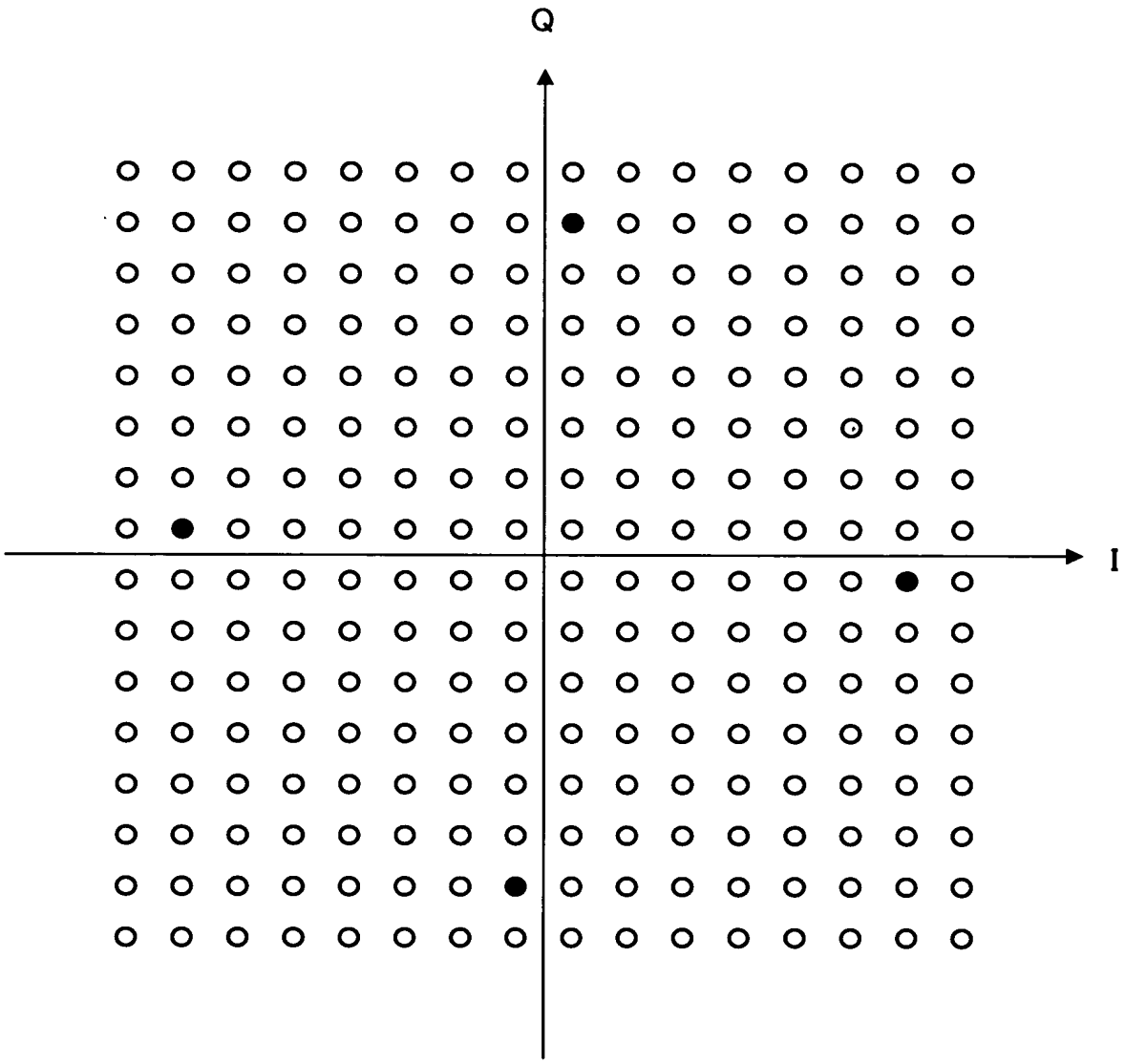


FIG.8

I COMPONENT	1	2	3	4
Q COMPONENT	4	1	2	3

FIG.9

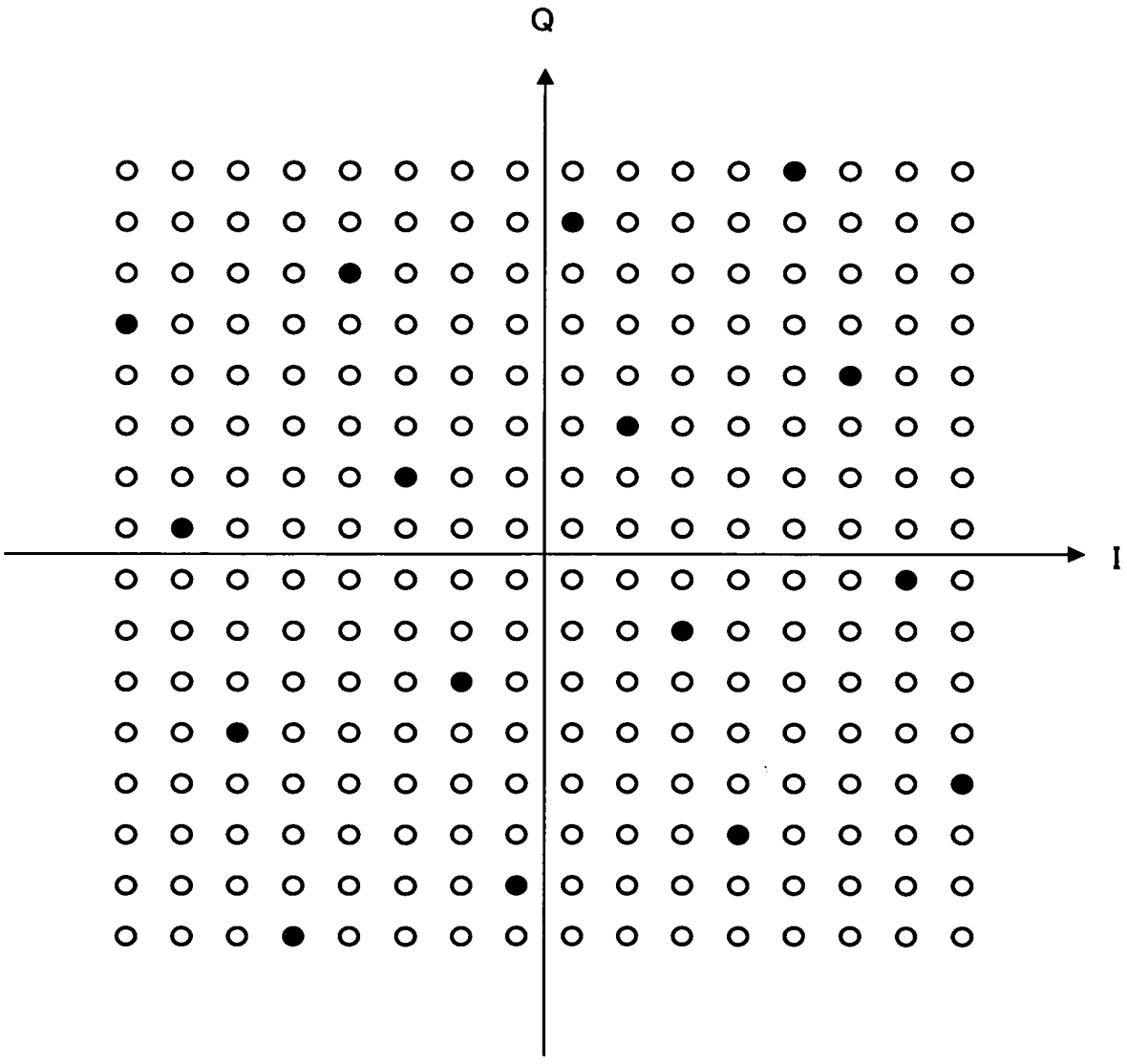


FIG.10

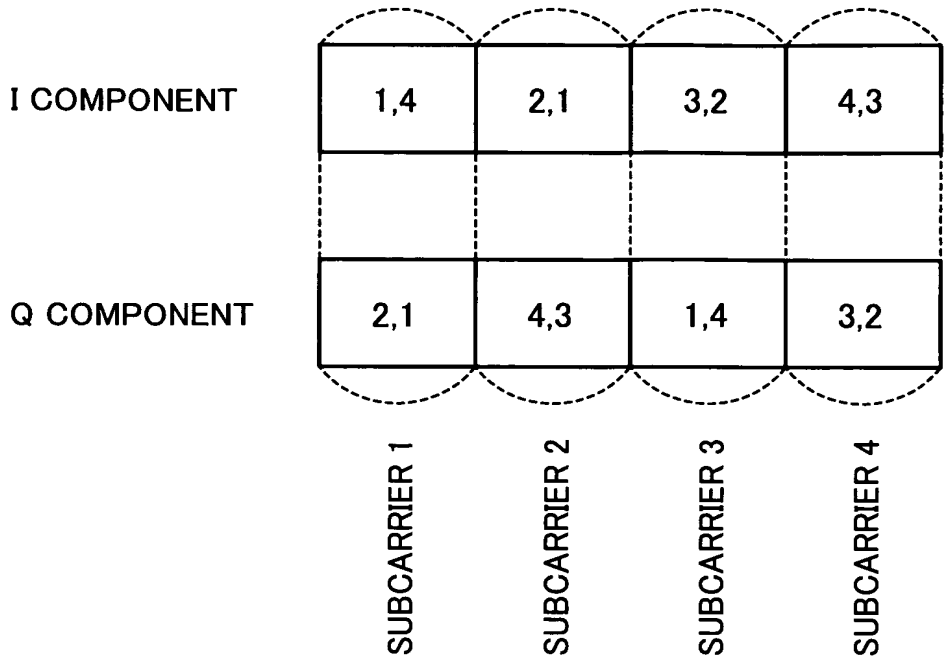

I COMPONENT
Q COMPONENT
1,4
2,1
3,2
4,3
2,1
4,3
1,4
3,2
SUBCARRIER 1
SUBCARRIER 2
SUBCARRIER 3
SUBCARRIER 4

FIG.11

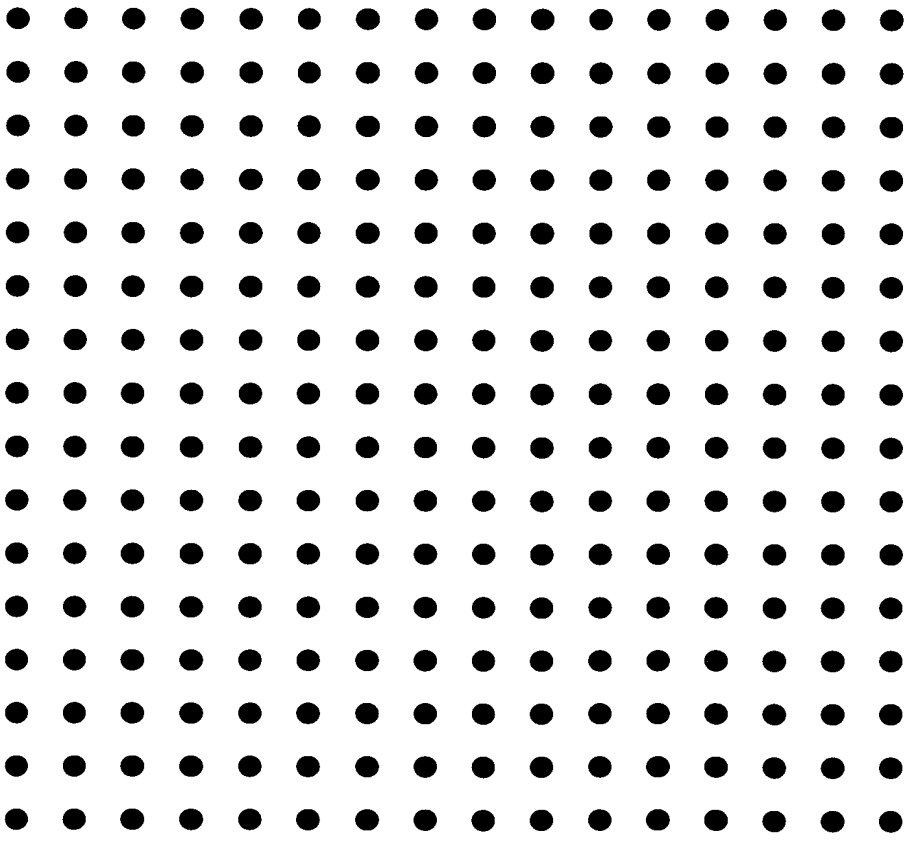


FIG.12

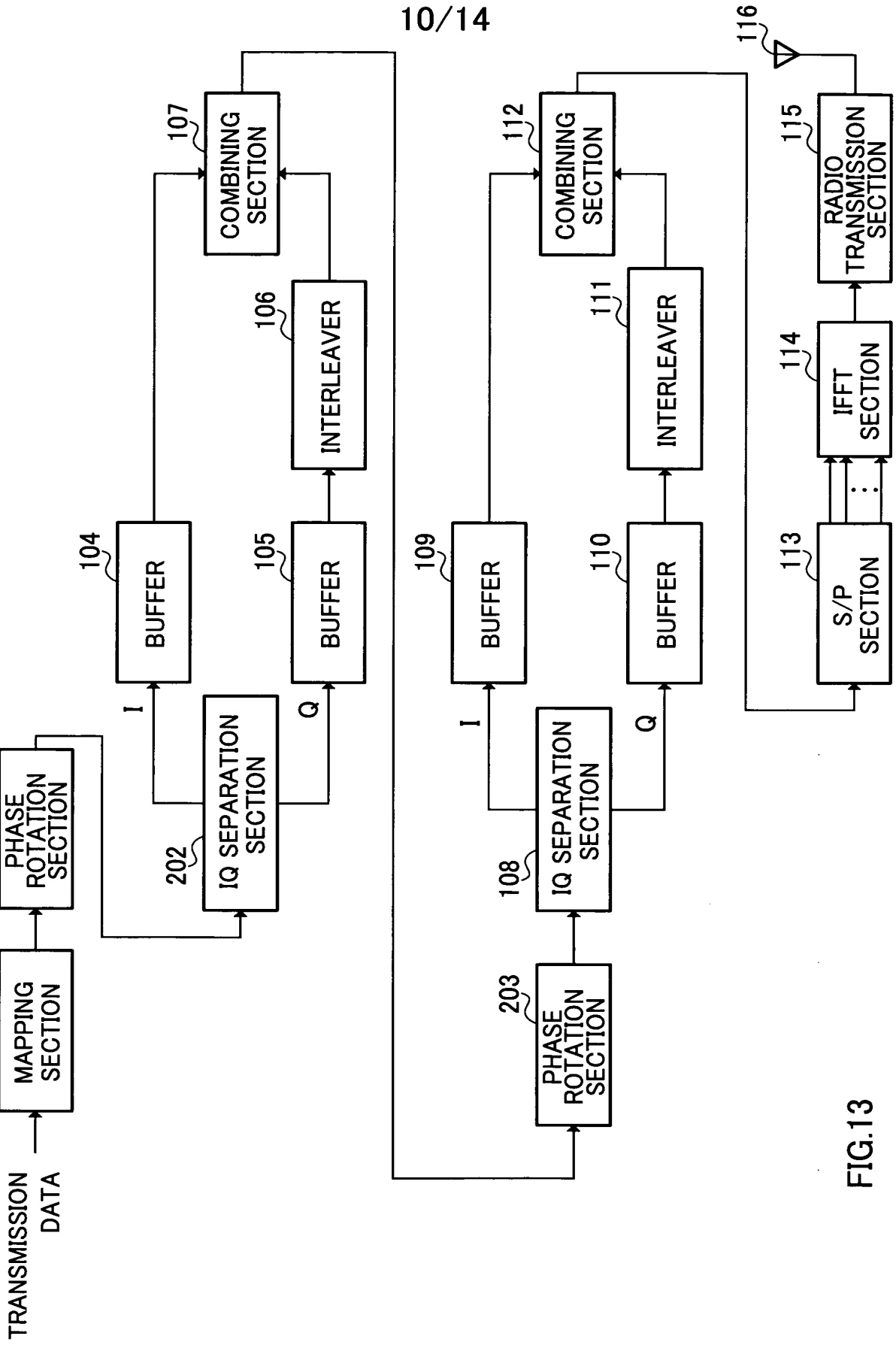

200 MULTICARRIER TRANSMISSION APPARATUS
TRANSMISSION DATA
101
MAPPING SECTION
201
PHASE ROTATION SECTION
202
IQ SEPARATION SECTION
I
Q
104
BUFFER
105
BUFFER
106
INTERLEAVER
107
COMBINING SECTION
203
PHASE ROTATION SECTION
108
IQ SEPARATION SECTION
I
Q
109
BUFFER
110
BUFFER
111
INTERLEAVER
112
COMBINING SECTION
113
S/P SECTION
114
IFFT SECTION
115
RADIO TRANSMISSION SECTION
116

FIG.13

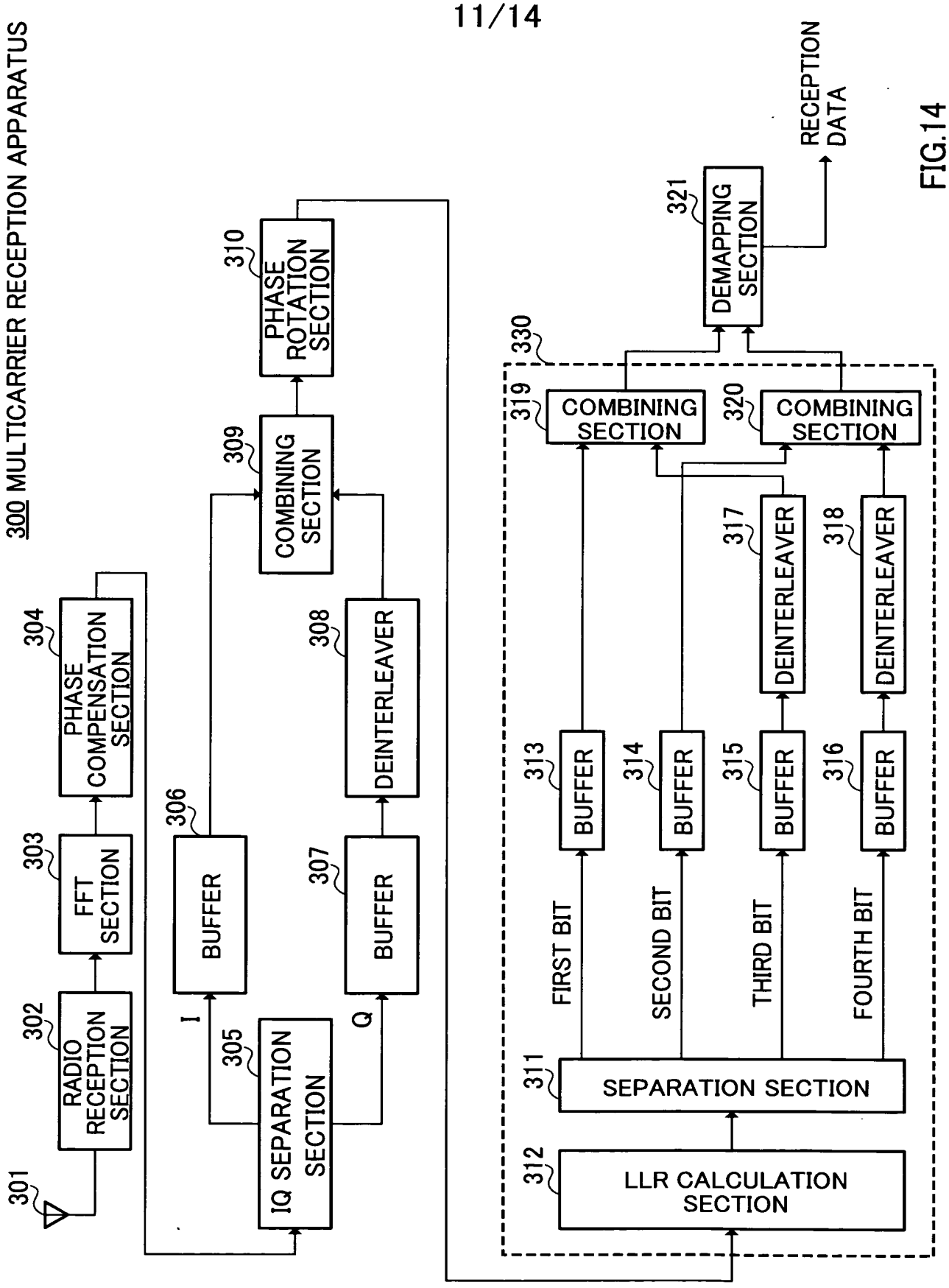

300 MULTICARRIER RECEPTION APPARATUS
301
RADIO RECEPTION SECTION
302
FFT SECTION
303
PHASE COMPENSATION SECTION
304
IQ SEPARATION SECTION
305
BUFFER
306
BUFFER
307
DEINTERLEAVER
308
COMBINING SECTION
309
PHASE ROTATION SECTION
310
I
Q
330
COMBINING SECTION
319
COMBINING SECTION
320
DEMAPPING SECTION
321
RECEPTION DATA
BUFFER
313
BUFFER
314
BUFFER
315
BUFFER
316
DEINTERLEAVER
317
DEINTERLEAVER
318
FIRST BIT
SECOND BIT
THIRD BIT
FOURTH BIT
SEPARATION SECTION
311
LLR CALCULATION SECTION
312

FIG.14

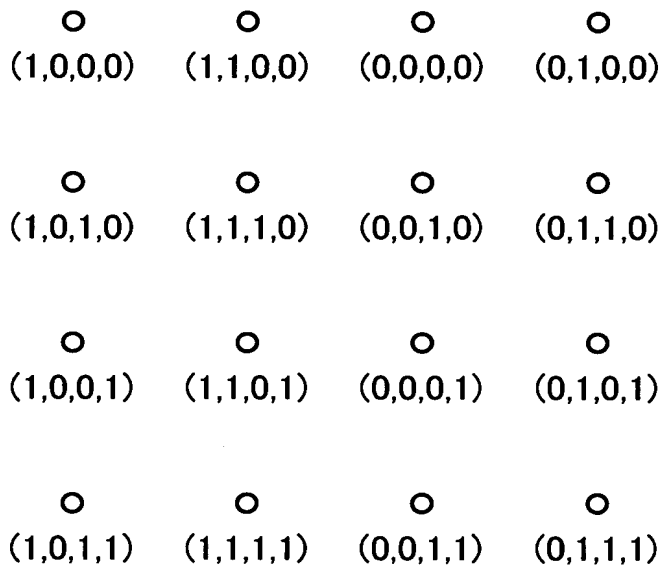

(1,0,0,0)
(1,1,0,0)
(0,0,0,0)
(0,1,0,0)
(1,0,1,0)
(1,1,1,0)
(0,0,1,0)
(0,1,1,0)
(1,0,0,1)
(1,1,0,1)
(0,0,0,1)
(0,1,0,1)
(1,0,1,1)
(1,1,1,1)
(0,0,1,1)
(0,1,1,1)

FIG.15

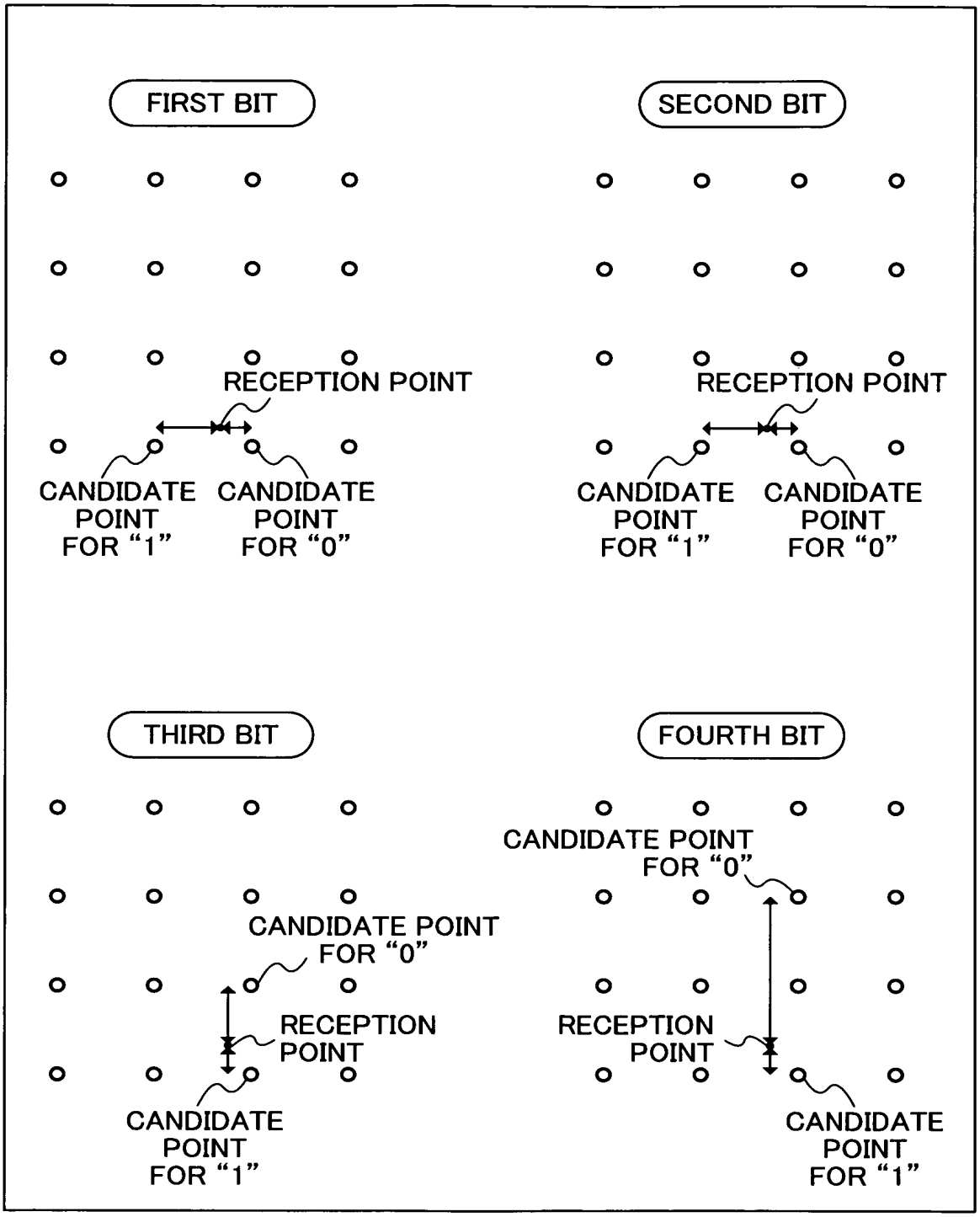

FIRST BIT
RECEPTION POINT
CANDIDATE POINT FOR "1"
CANDIDATE POINT FOR "0"
SECOND BIT
RECEPTION POINT
CANDIDATE POINT FOR "1"
CANDIDATE POINT FOR "0"
THIRD BIT
CANDIDATE POINT FOR "0"
RECEPTION POINT
CANDIDATE POINT FOR "1"
FOURTH BIT
CANDIDATE POINT FOR "0"
RECEPTION POINT
CANDIDATE POINT FOR "1"

FIG.16

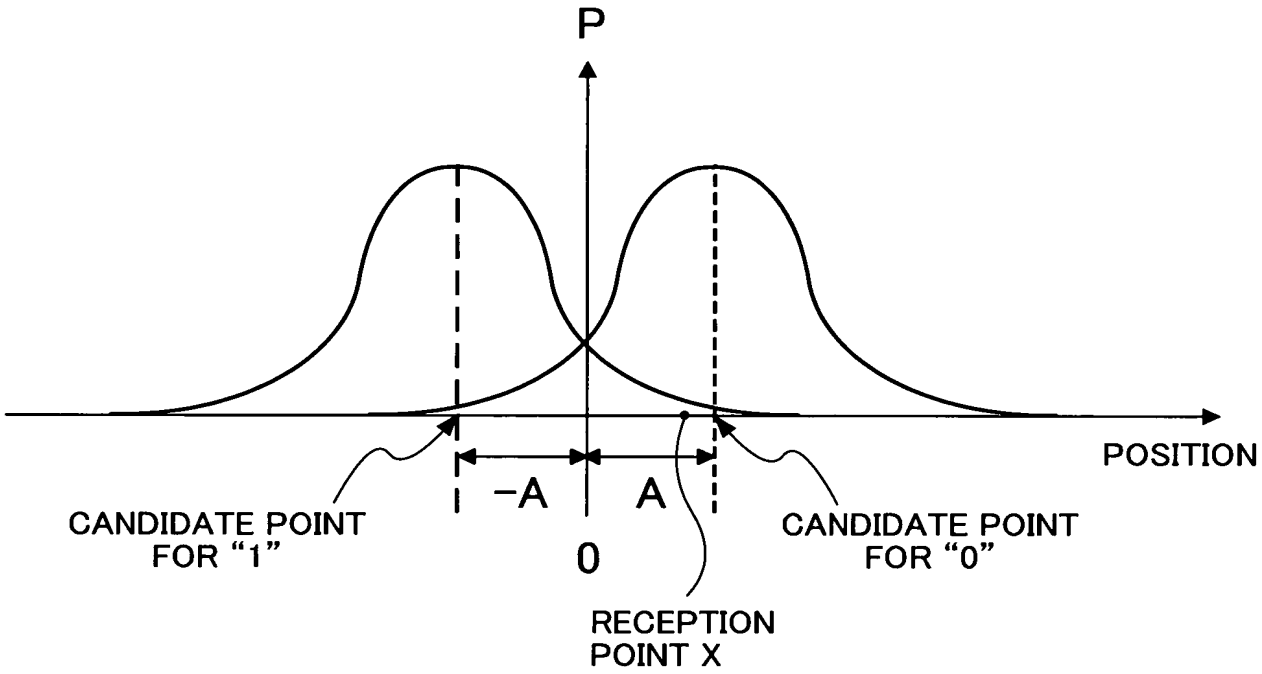

P
POSITION
−A
A
0
CANDIDATE POINT
FOR "1"
CANDIDATE POINT
FOR "0"
RECEPTION
POINT X

FIG.17